

(PCT Article 36 and Rule 70)

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2005/002560

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-30 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. 2-12, 16-22, 26-42 as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1, 14-15, 23-25 received by this Authority on 24.11.2005
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets fig. 1-14 as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☒ the claims, nos. 13
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																					
1.	<p>Statement</p> <table><tbody><tr><td rowspan="2">Novelty (N)</td><td>Claims</td><td><u>1-12, 14-42</u></td><td>YES</td></tr><tr><td>Claims</td><td></td><td>NO</td></tr><tr><td rowspan="2">Inventive step (IS)</td><td>Claims</td><td><u>1-12, 14-42</u></td><td>YES</td></tr><tr><td>Claims</td><td></td><td>NO</td></tr><tr><td rowspan="2">Industrial applicability (IA)</td><td>Claims</td><td><u>1-12, 14-42</u></td><td>YES</td></tr><tr><td>Claims</td><td></td><td>NO</td></tr></tbody></table>	Novelty (N)	Claims	<u>1-12, 14-42</u>	YES	Claims		NO	Inventive step (IS)	Claims	<u>1-12, 14-42</u>	YES	Claims		NO	Industrial applicability (IA)	Claims	<u>1-12, 14-42</u>	YES	Claims		NO
Novelty (N)	Claims		<u>1-12, 14-42</u>	YES																		
	Claims		NO																			
Inventive step (IS)	Claims	<u>1-12, 14-42</u>	YES																			
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Industrial applicability (IA)	Claims	<u>1-12, 14-42</u>	YES																			
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2.	<p>Citations and explanations (Rule 70.7)</p> <p>Document 1: JP 2004-300024 A (Matsushita Electric Industrial Co., Ltd., et al.), 28 October 2004</p> <p>Document 2: The Society of Chemical Engineers, Japan, "Kagaku Kogaku Binran," Dai 6 Pan, 1999</p> <p>Document 3: Fumio KAWAMURA, "Growth of Transparent, Large Size GaN Single Crystal with Low Dislocations Using Ca-Na Flux System," Jpn. J. Appl. Phys., Vol. 42, 2003, pages L729 to L731</p> <p>Document 4: JP 01-116013 A (Kawasaki Steel Corp.), 09 May 1989</p> <p>Claims 1 to 12 and 14 to 42</p> <p>The inventions set forth in claims 1 to 12 and 14 to 42 are novel and involve an inventive step in relation to documents 1 to 4 cited in the international search report.</p> <p>In particular, documents 1 to 4 do not disclose the technique for growing single crystals of a group III nitride compound "while agitating" the liquid starting material so as to generate a flow whereby the liquid starting material flows from the gas/liquid interface,</p>																					

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where the liquid starting material comes into contact with the gaseous starting material, towards the interior of the liquid starting material. Furthermore, it would not have been easy for a person skilled in the art to conceive of the technique in question.

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The disclosure in claim 31 is unclear. In particular, claim 31 sets forth a feature wherein the "pipe for connecting the aforementioned container and the outside of the aforementioned heating device has a structure such that at least either the aforementioned liquid starting material or the aforementioned other starting material is less susceptible to coagulation." However, the disclosure "less susceptible to coagulation" is vague, and merely signifies that there is a relatively low possibility of coagulation occurring; meanwhile, the structure of the pipe will differ significantly according to the desired degree of susceptibility to coagulation. Such being the case, the specific configuration of the production method set forth in claim 31, which employs a device for producing single crystals that comprises a pipe with the aforementioned "structure such that at least either the aforementioned liquid starting material or the aforementioned other starting material is less susceptible to coagulation," is unclear.